Immunization Update 2013

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Disclosures

- No financial conflict or interest with the manufacturer of any product named during this presentation.
- I will present recommendations for meningococcal conjugate vaccine (MCV4), tetanus-toxoid, diphtheria-toxoid, acellular pertussis (Tdap) vaccine, pneumococcal conjugate vaccine (PCV13) , and human papillomavirus vaccine (HPV) in an off-label manner

Overview

- Disease Burden
- Immunization Schedules
- Meningococcal Vaccination (Hib-MenCY)
- Influenza vaccination
- HPV vaccine
- Tdap (Pregnancy)
- PCV13 (Vaccination of high-risk adults)

* Citations,

Comparison of 20th Century Annual Morbidity and Current Morbidity: Vaccine-Preventable Diseases

Disease	20th Century Annual Morbidity†	2012 Reported Cases ††	Percent Decrease
Smallpox	29,005	0	100%
Diphtheria	21,053	1	> 99%
Measles	530,217	55	> 99%
Mumps	162,344	199	> 99%
Pertussis	200,752	41,880	79%
Polio (paralytic)	16,316	0	100%
Rubella	47,745	8	> 99%
Congenital Rubella Syndrome	152	2	99%
Tetanus	580	36	94%
Haemophilus influenzae	20,000	21*	> 99%

†Source: JAMA. 2007;298(18):2155-2163

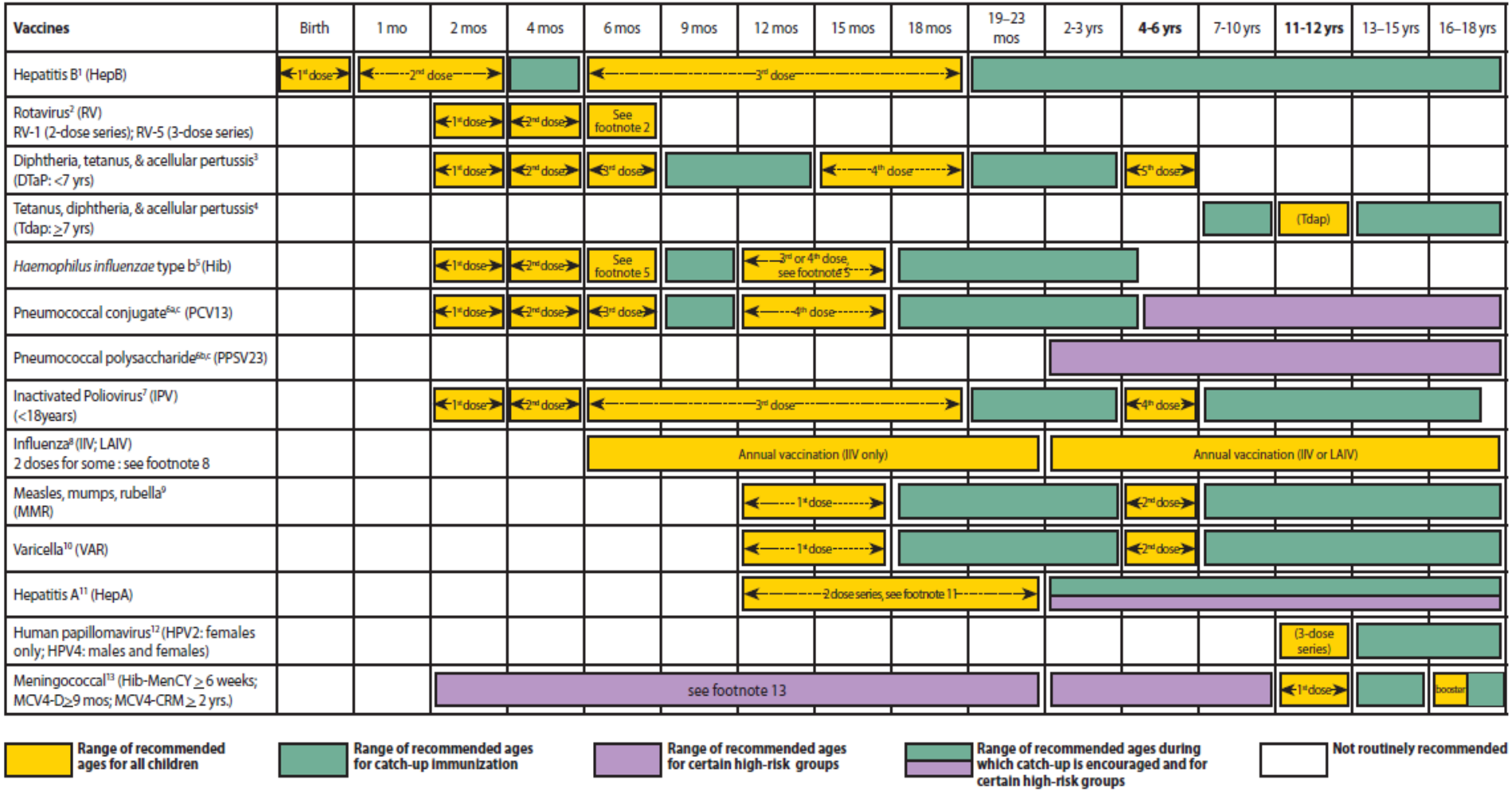
†† Source: CDC. MMWR January 4, 2013;61(52);ND-719-ND-731. (provisional week 52 data)

* *Haemophilus influenzae* type b (Hib) < 5 years of age. An additional 14 cases of Hib are estimated to have occurred among the 227 reports of Hi (< 5 years of age) with unknown serotype.

Figure 1. Recommended immunization schedule for persons aged 0 through 18 years – 2013.

(FOR THOSE WHO FALL BEHIND OR START LATE, SEE THE CATCH-UP SCHEDULE [FIGURE 2]).

These recommendations must be read with the footnotes that follow. For those who fall behind or start late, provide catch-up vaccination at the earliest opportunity as indicated by the green bars in Figure 1. To determine minimum intervals between doses, see the catch-up schedule (Figure 2). School entry and adolescent vaccine age groups are in bold.



Range of recommended ages for all children

Range of recommended ages for catch-up immunization

Range of recommended ages for certain high-risk groups

Range of recommended ages during which catch-up is encouraged and for certain high-risk groups

Not routinely recommended

This schedule includes recommendations in effect as of January 1, 2013. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Vaccination providers should consult the relevant Advisory Committee on Immunization Practices (ACIP) statement for detailed recommendations, available online at http://www.cdc.gov/vaccines/pubs/acip-list.htm. Clinically significant adverse events that follow vaccination should be reported to the Vaccine Adverse Event Reporting System (VAERS) online (http://www.vaers.hhs.gov) or by telephone (800-822-7967).Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for vaccination, is available from CDC online (http://www.cdc.gov/vaccines) or by telephone (800-CDC-INFO [800-232-4636]).

This schedule is approved by the Advisory Committee on Immunization Practices (http://www.cdc.gov/vaccines/acip/index.html), the American Academy of Pediatrics (http://www.aap.org), the American Academy of Family Physicians (http://www.aafp.org), and the American College of Obstetricians and Gynecologists (http://www.acog.org).

NOTE: The above recommendations must be read along with the footnotes of this schedule.

Recommended Adult Immunization Schedule—United States - 2013

Note: These recommendations must be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

VACCINE ▼ / AGE GROUP ►	19-21 years	22-26 years	27-49 years	50-59 years	60-64 years	≥ 65 years
Influenza [2,*]	1 dose annually					
Tetanus, diphtheria, pertussis (Td/Tdap) [3,*]	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs					
Varicella [4,*]	2 doses					
Human papillomavirus (HPV) Female [5,*]	3 doses					
Human papillomavirus (HPV) Male [5,*]	3 doses					
Zoster [6]					1 dose	
Measles, mumps, rubella (MMR) [7,*]	1 or 2 doses					
Pneumococcal polysaccharide (PPSV23) [8,9]	1 or 2 doses					1 dose
Pneumococcal 13-valent conjugate (PCV13) [10]	1 dose					
Meningococcal [11,*]	1 or more doses					
Hepatitis A [12,*]	2 doses					
Hepatitis B [13,*]	3 doses					

*Covered by the Vaccine Injury Compensation Program

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection; zoster vaccine recommended regardless of prior episode of zoster

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indication)

No recommendation

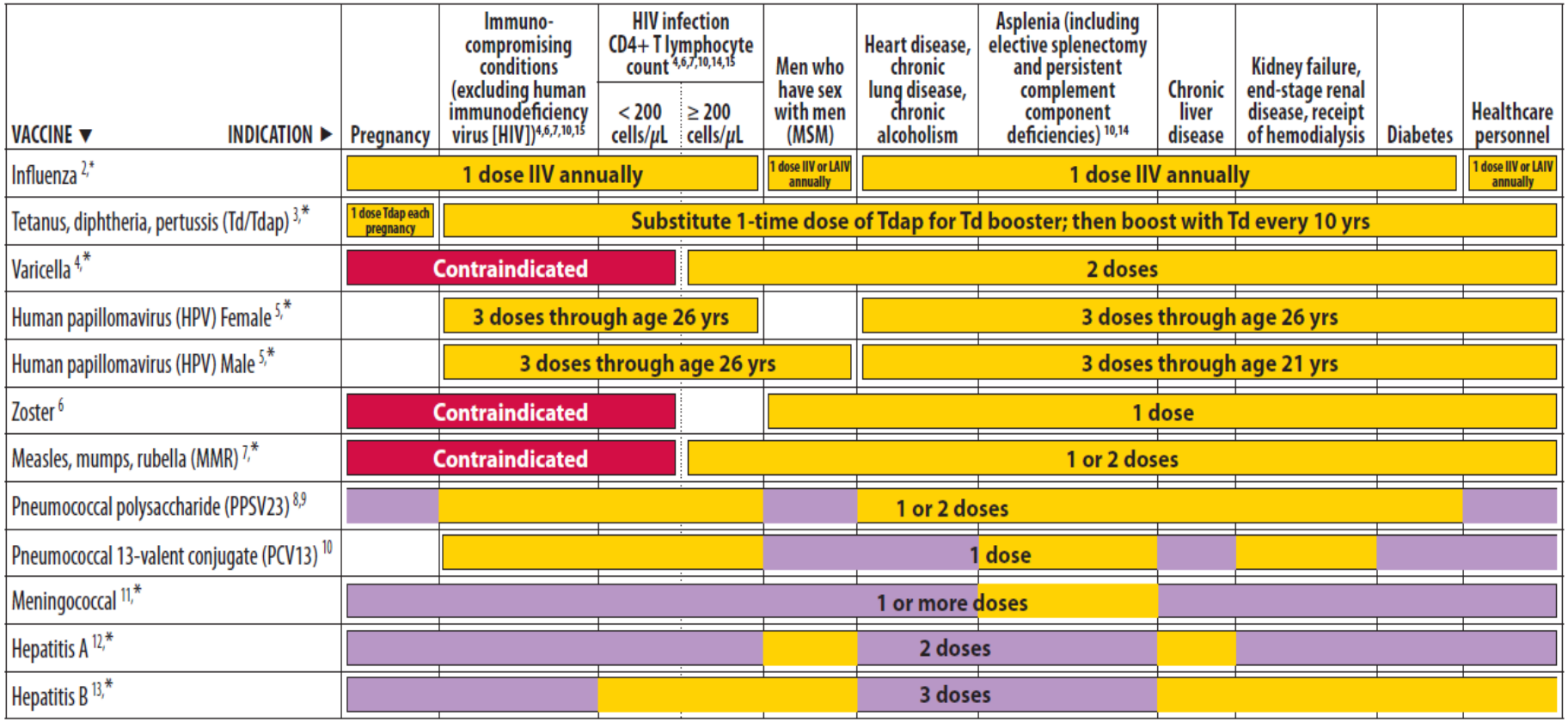
Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at www.vaers.hhs.gov or by telephone, 800-822-7967.

Information on how to file a Vaccine Injury Compensation Program claim is available at www.hrsa.gov/vaccinecompensation or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-357-6400.

Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at www.cdc.gov/vaccines or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 8:00 a.m. - 8:00 p.m. Eastern Time, Monday - Friday, excluding holidays.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP), the American Academy of Family Physicians (AAFP), the American College of Physicians (ACP), American College of Obstetricians and Gynecologists (ACOG) and American College of Nurse-Midwives (ACNM).



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Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)

No recommendation

These schedules indicate the recommended age groups and medical indications for which administration of currently licensed vaccines is commonly indicated for adults ages 19 years and older, as of January 1, 2013. For all vaccines being recommended on the Adult Immunization Schedule: a vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations on all vaccines, including those used primarily for travelers or that are issued during the year, consult the manufacturers' package inserts and the complete statements from the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/pubs/acip-list.htm). Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Hib-MenCY Vaccine

- **HibMenCY is a combination vaccine with protection against Hib and meningococcal serogroups C/Y**
  - Licensed June 2012 as 4-dose primary series (2,4,6, 12-15 months)
  - Expected to be available late summer 2013
- **October 2012 ACIP meeting**
  - Recommended for routine use only in infants at high-risk for meningococcal disease
  - Included HibMenCY in meningococcal VFC resolution for high-risk infants
  - HibMenCY may be used in any infant for routine Hib vaccination

Hib-MenCY Vaccine

- **Recommended for high-risk children 2 month – 18 months of age**
  - High-risk = persistent complement component deficiency, functional or anatomic asplenia, or being in an outbreak of serogroup C or Y disease
- **Can be used in circumstances where Hib vaccination is recommended (if meningococcal conjugate vaccine is NOT contraindicated – Combination vaccine rule)**
  - Included in Hib VFC resolution

Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Recommendations and Reports / Vol. 62 / No. 2
March 22, 2013

Prevention and Control of Meningococcal Disease

Recommendations of the Advisory Committee on Immunization Practices (ACIP)

Continuing Education Examination available at http://www.cdc.gov/mmwr/cme/conted.html.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

http://www.cdc.gov/mmwr/PDF/rr/rr6202.pdf

Meningococcal Vaccines

Vaccine	ACIP Abbreviation	Trade Name	Age Indications
Meningococcal Polysaccharide	MPSV4	Menomune	2 years and older
Meningococcal Conjugate	MCV4 MenACWY	Menactra	9 months through 55 years
Meningococcal Conjugate	MCV4 MenACWY	Menveo	2 years through 55 years
Meningococcal and *Haemophilus influenzae* type b combination	Hib-MenCY	MenHibrix	6 weeks through 18 months

Meningococcal Vaccination for Infants 2 through 18 months at Increased Risk

Risk Group	Primary Vaccination	Booster Dose*
Persistent complement deficiencies Functional or anatomic asplenia Risk during a community outbreak attributable to a vaccine serogroup	4 doses of Hib-MenCY (MenHibrix) at 2, 4, 6, and 12–15 months *Infants and children who received Hib-MenCY and are traveling to areas with high endemic rates of meningococcal disease are not protected against serogroups A and W-13. They should receive a quadrivalent meningococcal vaccination licensed for children 9 months of age and older prior to travel	Person remains at increased risk and completed primary dose or series at age: **2 mos–6 yrs:** Should receive additional dose of MenACWY 3 yrs after primary immunization; boosters to be repeated every 5 yrs **≥7 yrs:** Should receive additional dose of MenACWY 5 yrs after primary immunization; boosters to be repeated every 5 yrs

*ACIP off-label recommendation

Meningococcal Vaccination for Children 9 through 23 months at Increased Risk

Risk Group	Primary Vaccination*	Booster Dose
Persistent complement deficiencies Travel to, resident of, countries where meningococcal disease hyperendemic/ endemic Risk during community outbreak attributable to vaccine serogroup	2 doses of MCV4 (Menactra), 12 weeks apart *8 weeks apart if needed for travel **Because of inv. pneum disease high risk, children w. asplenia should not be immunized w. Menactra before 2 years of age to avoid interference with PCV response	Person remains at increased risk and completed primary dose or series at age: **2 mos–6 yrs:** Should receive additional dose of either MCV4 3 yrs after primary immunization; boosters to be repeated every 5 yrs **≥7 yrs:** Should receive additional dose of either MCV4 5 yrs after primary immunization; boosters to be repeated every 5 yrs

*ACIP off-label recommendation

Meningococcal Routine Vaccination for Persons 11 through 21 Years of Age

Primary Vaccination	Booster Dose*
Age 11–12 yrs, 1 dose Age 13–18 yrs, 1 dose if not vaccinated previously Age 19–21 yrs, not routinely recommended but may be administered as catch-up vaccination for those who have not received a dose after their 16th birthday	1 dose recommended if first dose administered before 16th birthday

*ACIP off-label recommendation

Meningococcal Vaccination for Persons 2 through 55 Years at Increased Risk and Not Previously Vaccinated

Risk Group	Primary Vaccination*	Booster Dose*
Persistent complement deficiencies Functional or anatomic asplenia HIV+, if another indication for vaccination exists	2 doses of MCV4 (Menactra or Menveo), 8 weeks apart *If Menactra is used, it should be administered at least 4 weeks after completion of all PCV doses	Person remains at increased risk and completed the primary dose or series at age: **2 mos–6 yrs:** Should receive additional dose of either MCV4 3 yrs after primary immunization; boosters should be repeated every 5 yrs thereafter **≥7 yrs:** Should receive additional dose of eitherMCV4 5 yrs after primary immunization; boosters should be repeated every 5 yrs thereafter

*ACIP off-label recommendation

Meningococcal Vaccination for Persons 2 through 55 Years at Increased Risk and Not Previously Vaccinated

Risk Group	Primary Vaccination	Booster Dose*
First year college students 21 yrs of age or younger living in residential housing Travel to or resident of countries where meningococcal disease is hyper endemic or endemic Risk during a community outbreak attributable to a vaccine serogroup microbiologists routinely exposed to isolates of *Neisseria meningitidis*	1 dose of MCV4 *If Menactra is used, it should be administered at least 4 weeks after completion of all PCV doses.	Person remains at increased risk and completed the primary dose or series at age: **2 mos–6 yrs:** Should receive additional dose of either MCV4 3 yrs after primary immunization; boosters should be repeated every 5 yrs thereafter **≥7 yrs:** Should receive additional dose of eitherMCV4 5 yrs after primary immunization; boosters should be repeated every 5 yrs thereafter

*ACIP off-label recommendation

Meningococcal Vaccination of High-Risk Persons 56 Years of Age and Older

- MPSV4 is only licensed vaccine for persons in this age group
- MPSV4 is preferred for meningococcal vaccine-naïve persons aged 56 years and older who anticipate requiring a single dose of meningococcal vaccine (e.g., travelers and persons at risk as a result of a community outbreak
- For persons now aged 56 years of age and older who were vaccinated previously with MCV4 and are recommended for revaccination or for whom multiple doses are anticipated (e.g., persons with asplenia and microbiologists), MCV4* is preferred

*ACIP off-label recommendation
http://www.cdc.gov/mmwr/PDF/rr/rr6202.pdf

Meningococcal Vaccine Recommendations - Summary

- Meningococcal vaccine is not routinely recommended for persons 2 through 10 or older than 18 years of age who are not in a high risk group

- All adolescents 11 through 18 years of age, preferably at 11 or 12 years

- Persons 9 months (Menactra) or 2 years (Menveo) through 10 years and 19 and older who are at increase risk of meningococcal disease*

*due to underlying medical condition or increased risk of exposure

Influenza Vaccination Recommendation

- Annual influenza vaccination is now recommended for every person in the United States 6 months of age and older

Influenza Vaccine Presentations 2013-2014

Name	Manufacturer	Age Range	# Antigens	Presentation	Route	Type/Abbrev.
Afluria	CSL	5 and older	Trivalent	Pre-Filled Syringe Multi-Dose Vial	IM	Inactivated IIV3
Agriflu	Novartis	18 and older	Trivalent	Pre-Filled Syringe	IM	Inactivated IIV3
Fluarix	GSK	3 and older	Trivalent	Pre-Filled Syringe	IM	Inactivated IIV3
			Quadrivalent	Pre-Filled Syringe	IM	Inactivated IIV4
FluBlok†	Protein Sciences	18 - 49	Trivalent	Single-Dose Vial	IM	Recombinant RIV3
Flucelvax§	Novartis	18 and older	Trivalent	Pre-Filled Syringe	IM	Cell Culture ccIIV3
FluLaval	GSK	18 and older	Trivalent	Multi-Dose Vial	IM	Inactivated IIV3
FluMist	Medimmune	2 - 49	Quadrivalent	Pre-Filled Sprayer	Intranasal (IN)	Live Attenuated LAIV4
Fluvirin	Novartis	4 and older	Trivalent	Pre-Filled Syringe Multi-dose Vial	IM	Inactivated IIV3
Fluzone	Sanofi Pasteur	6 months and older	Trivalent	Pre-Filled Syringe Single-Dose Vial Multi-Dose Vial	IM	Inactivated IIV3
Fluzone High-Dose	Sanofi Pasteur	65 and older	Trivalent	Pre-Filled Syringe	IM	Inactivated IIV3
Fluzone Intradermal	Sanofi Pasteur	18 - 64	Trivalent	Pre-Filled Microinjection System	Intradermal (ID)	Inactivated IIV3

Choice of Influenza Vaccine

- The choice should primarily be driven by the age-indication and contraindications and precautions
- No current preference for quadrivalent vs trivalent
- No current preference for high-dose vs standard dose
- No current preference for IIV vs LAIV in any age group for whom either is indicated

Influenza Vaccine strains for the 2013-14 Season

- WHO: Feb 23, 2013 recommendations for Northern Hemisphere's 2013-2014 influenza vaccine to contain:
  - an A/California/7/2009 (H1N1)pdm09-like virus;
  - A/Victoria/361/2011(H3N2)-like virus
  - B/Massachusetts/2/2012-like virus NEW
  - For quadrivalent vaccines: add B/Brisbane/60/2008-like virus

- FDA (VRBPAC): Feb 27, 2012 agreed with recommendation

http://www.who.int/influenza/vaccines/virus/recommendations/2013_14_north/en/index.html

H7N9 Influenza

- Novel strain causing infections in China and Taiwan
- Like other Type A strains, birds are the reservoir
- Causes severe disease in those infected
- No sustained human to human transmission
- No cases in the United States
- Vaccine candidate strain is being developed
- Interim guidance on the use of detection of H7N9, and use of antiviral agents is posted on the CDC web site

www.cdc.gov/mmwr/preview/mmwrhtml/mm62e0501a1.htm?s_cid=mm62e0501a1_w

www.cdc.gov/flu/avianflu/h7n9-detecting-diagnostics.htm

www.cdc.gov/flu/avianflu/h7n9-antiviral-treatment.htm

http://www.nejm.org/doi/full/10.1056/NEJMoa1304617?query=TOC

Human Papillomavirus (HPV)

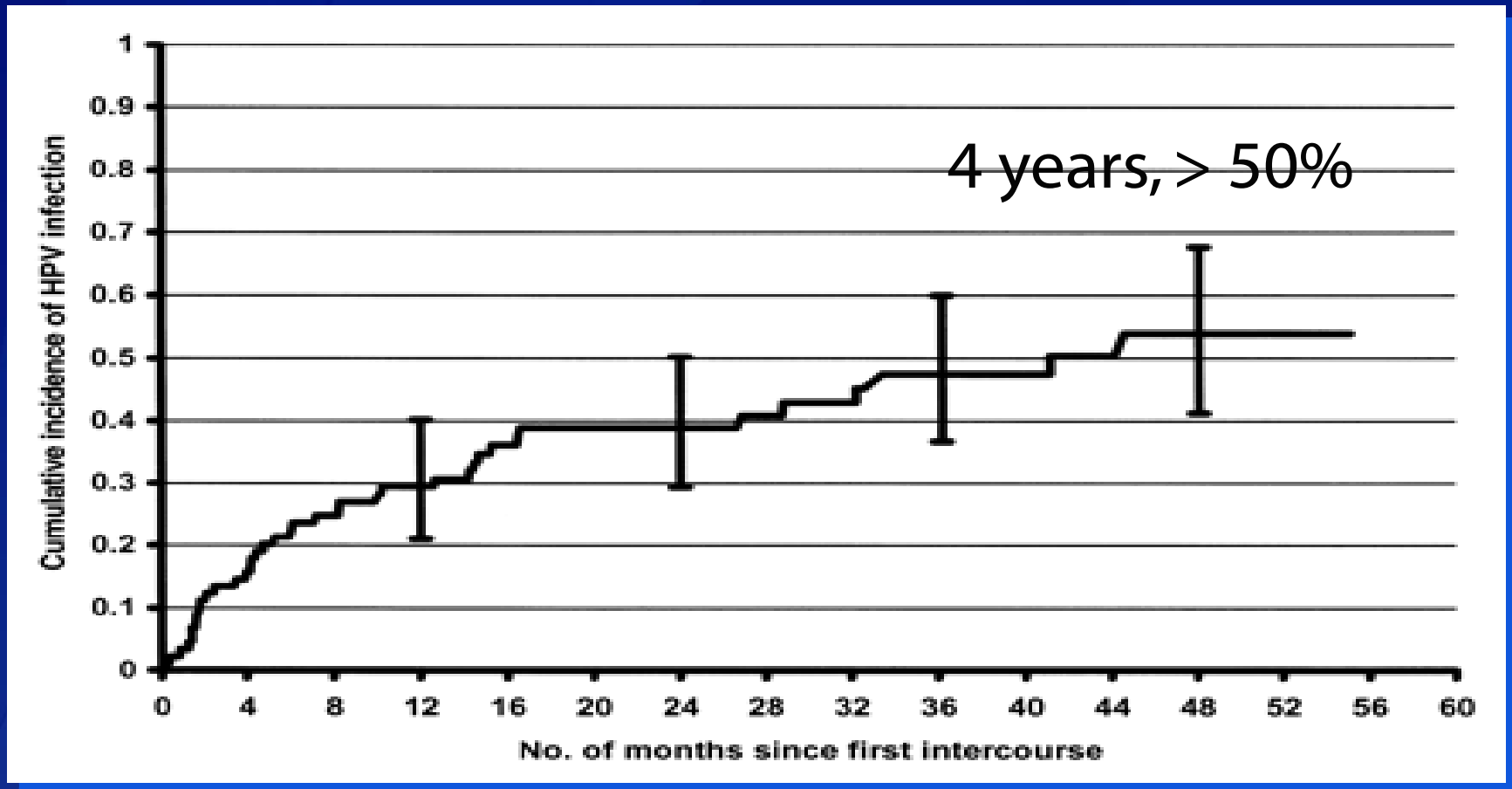
- Common sexually transmitted infection
- More than 100 types
- Established cause of cervical and other anogenital cancers
- Worldwide cervical cancer causes 233,000 deaths per year

HPV Disease Burden in the U.S.

- Common among adolescents and young adults
- More than 80% of sexually active women will have been infected by age 50
- Infection also common in men

Cates, STD 26:Supp 1-7 (1999); Meyers et al. Am J Epidemiol 151: 1158-1171 (2000)

Cumulative Incidence of Any HPV Infection Months after Sexual Initiation



Am J Epidemiol, 2003;157(3):218-26

Cervical Cancer Disease Burden in the United States

- **American Cancer Society's most recent estimates for cervical cancer in the U.S. for 2011:**
  - About 12,710 new cases of invasive cervical cancer will be diagnosed
  - About 4,290 women will die from cervical cancer
- **Almost 100% of these cervical cancer cases were caused by one of the 40 HPV types that infect the mucosa**

Source: American Cancer Society
www.cancer.org/

HPV Vaccines

- **Two HPV vaccines are available**
- **HPV4 (Gardasil, Merck)**
  - Contains HPV types 16, 18, 6 and 11
  - Approved for the prevention of
    - cervical, vaginal and vulvar cancers in females
    - anal cancers caused by HPV in males and females
    - genital warts in females and males
- **HPV2 (Cervarix, GSK)**
  - Contains HPV types 16 and 18
  - Approved for the prevention of cervical cancers in females

HPV Associated Disease

Type	Women	Men
16/18	70% of cervical cancers 70% of anal/genital cancers	70% of anal cancers
6/11	90% of genital warts 90% of RRP* lesions	90% if genital warts 90% of RRP lesions Transmission to women

* RRP = recurrent respiratory papillomatosis

HPV Vaccination Schedule

- **Recommended schedule is 0, 1-2, 6 months**
  - Following the recommended schedule is preferred
- **Minimum intervals**
  - 4 weeks between doses 1 and 2
  - 12 weeks between doses 2 and 3
  - 24 weeks between doses 1 and 3
- **Administer at the same visit as other age-appropriate vaccines – Tdap, MCV**

ACIP HPV Vaccination Recommendations

Males

- Routine: 11 or 12 years
- Catch-up:
  - 13-21 years All
  - 22 -26 years
    - HIV-infection
    - Immunocompromised
    - MSM
- Healthy men: 22 -26 years *may be* vaccinated
- Administer HPV4 only

Females

- Routine: 11 or 12 years
- Catch-up: 13 - 26 years
- Administer HPV4 or HPV2

HPV Immunization Rates*, NIS-Teen, 2011
Females13-17 Years of Age

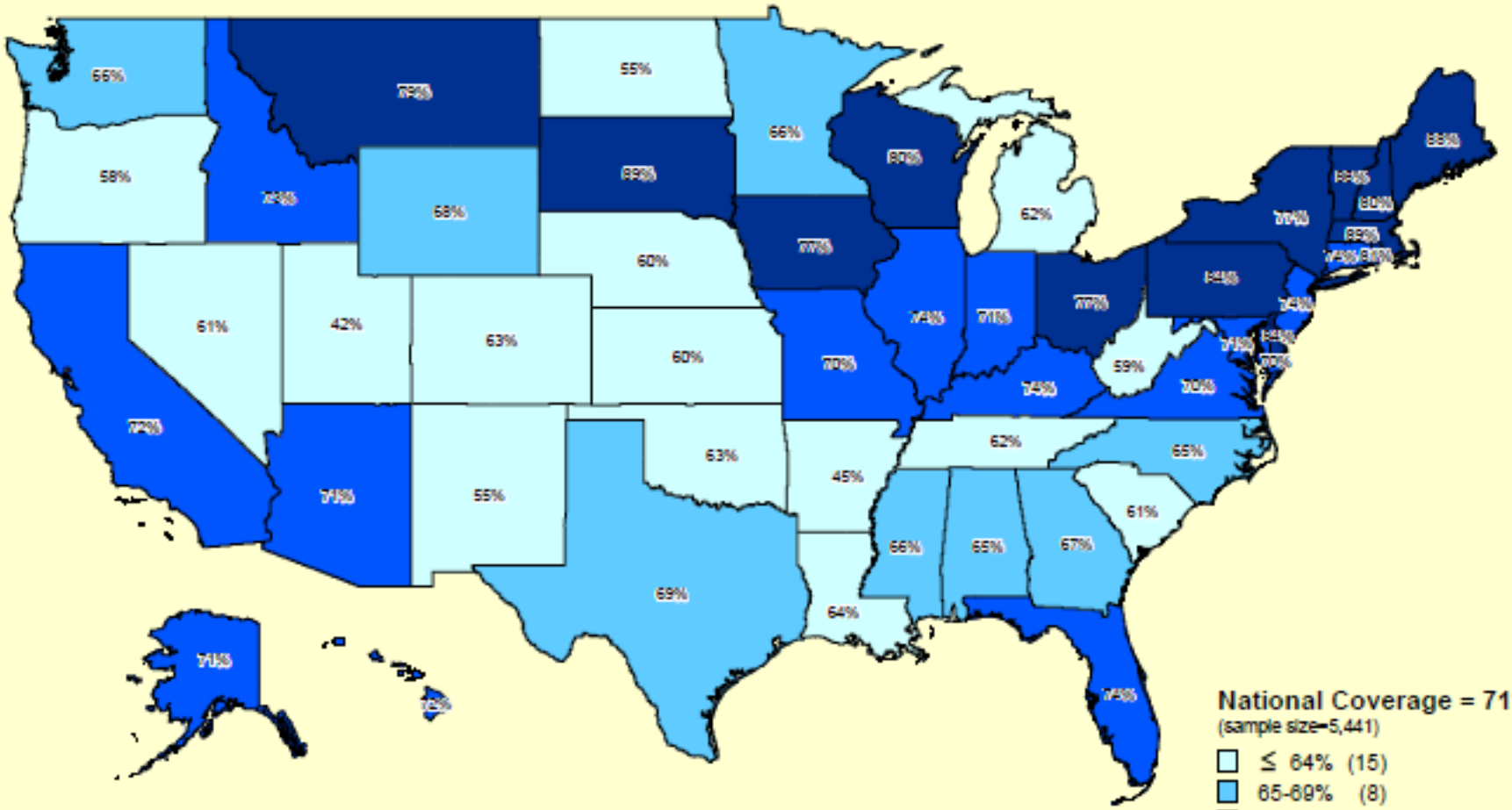
HPV Vaccine	U.S.	NY
1 or more doses	53%	46.6%
3 dose series completion **	70.7%	76.7%

*Percentages ≥1 human papillomavirus vaccine, either HPV4 or HPV2 reported among females only (n=9,220)

** Percentage of females who received 3 doses among those who had at least 1 HPV dose and at least 24 weeks between the first dose and interview date.

MMWR 2012;61 (No. 34):671- 677

Conditional Completion Rate of HPV*
Female Adolescents Aged 13-17 Years Old, 2011



Note 1: *Human Papillomavirus Vaccine, either quadrivalent or bivalent. Percentage of female adolescents who received 3+ doses HPV vaccine among females receiving 1+ dose with at least 24 weeks between the first dose and the time of household interview.

Note 2: Includes female adolescents born between January 1993 and February 1999

Source: National Immunization Survey - Teen (NIS - Teen)

Strategies for Increasing HPV Vaccination Rates in Clinical Practices

- **Recommend HPV vaccine!**
  - Include HPV vaccine when discussing other needed vaccines
- **Integrate standard procedures supporting vaccination**
  - Assess for needed vaccines at every clinical encounter
  - Immunize at *every* opportunity
  - Standing orders
- **Reminder and recall**
- **AFIX: assessment, feedback, incentive, and eXchange**
- **NEW! HEDIS measure (Jan 2012)**
  - Proportion of 13 year old girls who have not received 3 doses

Tools for improving uptake of HPV:
www.cdc.gov/vaccines/teens

Tdap Vaccines

- **2 vaccines available licensed for different age groups**
- **Boostrix (GlaxoSmithKline)**
  - **NEW!** Approved for persons 10 years of age and older
  - Single dose
- **Adacel (sanofi pasteur)**
  - Approved for persons 11-64 years of age
  - Single dose

General Principles for Use of Tdap

- Tdap preferred to Td to provide protection against pertussis

- Both vaccines approved as a single dose

Tdap-naïve Women and Pregnancy

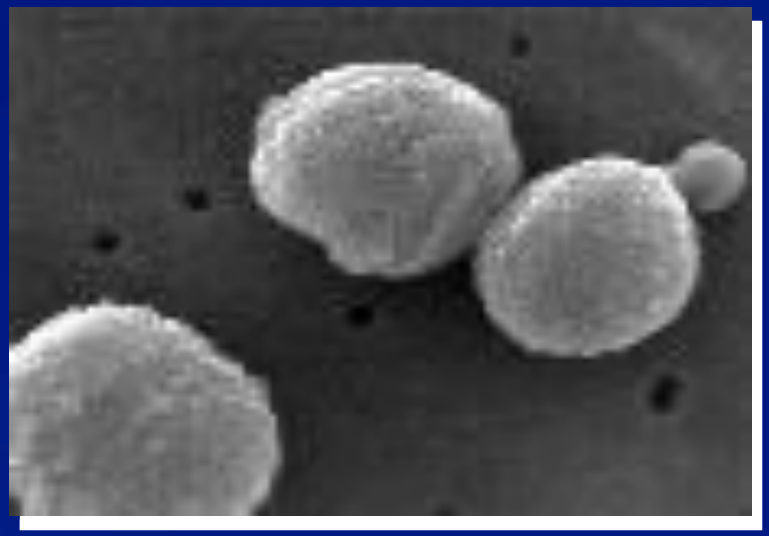
- Providers of pregnant women should recommend Tdap to their patients
- This strategy is preferred to cocooning, but if Tdap cannot be given in pregnancy it can be given in postpartum period

Pregnancy and Repeat Tdap Doses

- Pregnant women should receive Tdap with each pregnancy
- Ideal time is 27-36 week gestational age

Streptococcus pneumoniae

- Gram-positive bacteria
- 90 known serotypes
- Polysaccharide capsule important virulence factor
- Type-specific antibody is protective
- Very limited cross-reactivity



Pneumococcal Vaccines

- 1977 — 14-valent polysaccharide vaccine licensed
- 1983 — 23-valent polysaccharide vaccine licensed (PPSV 23)
- 2000 — 7-valent polysaccharide conjugate vaccine licensed (PCV7)
- 2010 — 13-valent polysaccharide conjugate vaccine licensed (PCV13)

Risk Factors for Invasive Pneumococcal Disease

- Functional or anatomic asplenia
- Immunosuppression
- Renal disease
- CSF leak
- Cochlear implants
- Chronic Disease
- Cardiovascular
- Pulmonary (including asthma over 19 years of age)
- Metabolic
- Liver
- Alcoholism
- Cigarette smoking over 19 years of age
- Resident of nursing home

PCV13 Licensure

- PCV13 is approved by the Food and Drug Administration for:
  – adults 50 years of age and older

- ACIP recommended use of PCV13 for high risk persons 19 years and older (June 20, 2012)

Adult PCV13-use and Risk Factors for Invasive Pneumococcal Disease

- Functional or anatomic asplenia
- Immunosuppression
- Renal disease
- CSF leak
- Cochlear implants
- *Chronic Disease*
- *Cardiovascular*
- *Pulmonary (including asthma over 19 years of age)*
- *Metabolic*
- *Liver*
- *Alcoholism*
- *Cigarette smoking over 19 years of age*
- *Resident of nursing home*

Pneumococcal Polysaccharide Vaccine

- 60%-70% against invasive disease
- Less effective in preventing pneumococcal pneumonia

First-dose Recommendation for Pneumococcal Polysaccharide Vaccine

- Functional or anatomic asplenia
- Immunosuppression
- Renal disease
- CSF leak
- Cochlear implants
- Chronic Disease
- Cardiovascular
- Pulmonary (including asthma over 19 years of age)
- Metabolic
- Liver
- Alcoholism
- Cigarette smoking over 19 years of age
- Resident of nursing home

Five-year PPSV23 Revaccination

- Functional or anatomic asplenia
- Immunosuppression
- Renal disease
- *CSF leak*
- *Cochlear implants*
- *Chronic Disease*
- *Cardiovascular*
- *Pulmonary (including asthma over 19 years of age)*
- *Metabolic*
- *Liver*
- *Alcoholism*
- *Cigarette smoking over 19 years of age*
- *Resident of nursing home*

Pneumococcal Polysaccharide Vaccine Candidates for Revaccination

- Persons vaccinated at <65 years of age

MMWR 1997;46(RR-8):1-24

Recommendations for use of PCV13 and PPSV23 in Pneumococcal Vaccine-Naïve Adults

- Adults 19 years and older with immunosuppression, renal disease, functional or anatomic asplenia, CSF leak, or a cochlear implant who are vaccine naïve, should receive a single dose of PCV13 followed by a dose of PPSV23 at least 8 weeks later

- For those that require additional doses of PPSV23, a second dose of PPSV23 is recommended 5 years after the first dose of PPSV23

(Official Publication Pending)

Recommendations for use of PCV13 in Adults Previously Vaccinated with PPSV23

- Adults with immunocompromising conditions, renal disease, functional or anatomic asplenia, CSF leak, or a cochlear implant previously vaccinated with PPSV23 should receive PCV13 one or more years after the last PPSV23 dose
- For those that require additional doses of PPSV23, the first dose should be administered no sooner than 8 weeks after PCV13 and at least 5 years after the most recent dose of PPSV23

(Official Publication Pending)

Thank You

Hotline: **800.CDC.INFO**

Email: **nipinfo@cdc.gov**

Website: **www.cdc.gov/vaccines**